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Headedness and Whole-word Effects in Compound Processing: Evidence from Neuropsychological Studies

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Psycholinguistic literature has provided a large amount of evidence regarding the mental representation of compound words. However, results are not always coherent and a number of questions remain unanswered. Namely, it is not clear whether the head-modifier structure of compound words is represented at mental level. Moreover, behavioral evidence in favor of a whole-word access is not always convincing. In the present communication three experiments on neuropsychological patients will be reported, addressing these unresolved issues about compound-word representation.

A first multiple-single case study on 7 neglect dyslexic patients was run employing a reading task. Both head-initial (*pescespada*, "swordfish", lit. fishsword) and head-final (*astronave*, "starship") compounds were employed, as well as paired pseudocompounds (concatenation of two existing words not forming a real compound: *pestespada*, lit. *plaguesword, and *antronave*, lit. *caveship). Patients reported more often the leftmost constituent when it was head than when it was modifier of the compound. Moreover, patients were better in reading compounds than pseudocompounds, even if the two kinds of stimuli were identical except for global lexicality. These results suggest that the head-modifier structure is represented in the mental lexicon, and that whole-word access to compounds does occur.

The evidence of whole-word access is consistent with data emerging from a single case study of a deep dyslexic patient. The patient was asked to read isolated Verb-Noun (VN) compound nouns (*lavapiatti*, "dishwasher", lit. washdishes) as well as their individual constituents. In a second task, VN compounds were presented in a sentence context (*I clienti riempirono il **guardaroba** in una sola ora*, "The patrons filled the **coatroom** in an hour"), and were compared to paired verb phrases (*Per tutta la sera Maria **guarda roba** indecente in TV, "*Mary **watches** trashy **stuff** on TV all night long") also embedded in a sentence context. When reading isolated VN compounds, the patient made errors involving more often the verb than the noun constituent. Since VN compounds are globally nouns, this would suggest automatic access to the constituent representations. However, when embedded in sentences, VN compounds were read better than verb-phrases and no grammatical-class effect emerged, thus indicating that in a sentence context compound nouns are accessed as whole-word, and that the isolated-word presentation may enhance a parallel parsing procedure.

Finally, the issue about headedness representation was addressed in a group study on 88 aphasic subjects. Patients were asked to participate in a picture naming and on-definition naming experiment, in which both head-initial and head-final compounds were employed as target stimuli. The patients' performance was codified in terms of their ability to retrieve either constituents. A headedness effect emerged in the first-constituent analysis: the first constituent was more easily retrieved when it was head than when it was modifier of the compound.

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However, a similar effect did not emerge in the second-constituent analysis, suggesting a role of headedness in the mental lexicon, but only when considered together with the constituent position within the compound string.

The results of the experiments are discussed in terms of their consequence on current models of compound processing.